Injury rates in Female and Male Military Personnel: A Systematic Review and Meta-Analysis

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Introduction

An effective military force is required to be agile, capable, efficient, and potent. Injuries to military personnel interrupt active duty service and can detract from overall capability. These injuries are associated with a high individual and organizational burden, with lost work time and financial costs all problematic for the ongoing functioning of a military force. Injury control strategies have therefore been described as force multipliers. Female personnel form an integral part of any modern defence force, but little research has examined their experiences of injury, to inform injury control efforts.

Purpose

The aim of this review was to identify and synthesise findings from studies of injury rates and patterns in female military personnel, comparing them to those of male personnel.

Methods

A systematic search was conducted for studies which compared injury rates between the sexes at any stage of military service, from basic training through to deployment. Databases searched included PUBMED, CINAHL and OVID. Eligible articles were rated for their quality using the Critical Appraisal Skills Program (CASP) tools and data were extracted, synthesized, and where possible underwent meta-analysis.

Results

A total of 27 studies were eligible and included. Methodological quality ranged from a perfect score of 100% down to 58%, with an average of 81% across all studies. Relative risks for injuries (reported as RR [95%CI]) to females when compared to males were 2.17 [1.93-2.43] during basic training, 1.54 [1.32–1.78] during officer training and 1.30 [1.10-1.53] post basic training.

Females tended to make bigger improvements in their fitness during basic training than males and after adjustment for differences between the sexes in average fitness levels (2 mile run), there was no longer a significant difference in injury rates (adjusted RR: 0.96 [0.88-1.06]). Studies show that females tend to report their injuries more frequently and sooner than males.

Conclusions

While this review found a higher rate of reported injuries in female military personnel when compared to male personnel, differences between the sexes in average fitness levels may largely explain these differences.

The difference in rates of reported injuries was greatest during basic training, and reduced thereafter, possibly due in part to a reduced difference in fitness between the sexes or increased opportunity to self-determine workloads relative to fitness levels.

Implications

True injury rates of female personnel within military populations, adjusted for differences between the sexes in reporting rates and average fitness levels, appear close to male injury rates.

To minimize female injuries within the military, fitness should be maximized prior to commencement of basic training.

Defence Health Foundation